

Stepin, B.D.

USSR/Chemistry - Copper sulfate production

FD-887

Card 1/1 Pub.50 - 20/24

Author : *Stepin, B. D. ✓

Title : Experience of advanced workers ("peredoviki") in the production of
copper sulfate

Periodical : Khim. prom., No 6, 376-377 (56-57), Sep 1954

Abstract : Describes improvements in the centrifuging of copper sulfate crystals
to separate them from the mother liquor. One graph.

Institution : State Chemical Plant imeni Voykov (*Chief of a Production Department).

Submitted :

STEPIN, B.D.

Chem Rational heat utilization in copper sulfate manufacture.
B. D. STEPIN, I. A. Gil'denblat, and S. A. Grinshteyn.
Khim. Prom. 1956, 803-6. — A heat balance was calcd. for
CuSO₄·5H₂O production from Cu granules dissolved in
H₂SO₄ + CuSO₄ soln. at a temp. of 85°, produced by the
soln. of Cu and moderated by an airblast, which oxidized
the Cu to the cupric state. Heat can be saved by a reuse
of part of the air, which is heated to 80° when leaving the
soln., and packing the crystals from the centrifuge, contg.
under 5% moisture, without addnl. drying.
W. M. Sternberg

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(FM)

STEPIN, B. D.

27
The World L. A. Giklenblat, P. T. Shelenov, B. D.
Stepin, S. N. Arbatov, G. A. Grunov, and B. L. Peslev.
U.S.S.R. 105,658 Aug. 25, 1957. Molten Sn heated to
350-400° is atomized with O preheated to 230-250° into a
furnace held at 1100°. M. H. S. 11-500

STEPIN, B.D.; GIL'DENBLAT, I.A.; GRINSHTEYN, S.A.

Accelerating the process of copper sulfate production.

Khim.prom. no.3:175-176 Ap-May '57. (MIRA 10:7)

1. Gosudarstvennyy soyuznyy khimicheskiy zavod im. Voykova.
(Copper sulfate)

5(1)

AUTHOR: Stepin, B. D.

SOV/64-59-4-18/27

TITLE: Rubidium (Rubidiy). Use in Science and Engineering
(Primeneniye v nauke i tekhnike)

PERIODICAL: Khimicheskaya promyshlennost', 1959, Nr 4, pp 64-69 (USSR)

ABSTRACT: A detailed survey concerning the applicability of Rubidium is given. After a short description of the Rb and the world production of Rb it is said that in the USSR the following scientists are concerned with the chemistry and technology of Rb: Ye.S. Burkser, I. V. Tananayev, N. I. Zabrodin, Ye. A. Nikitina, F. M. Perel'man, V. Ye. Plyushchev, and others. Thanks to the efforts of the latter the difficulties in the production of Rb from carnallite and lepidolite could be overcome. The most extensive carnallite deposits which bear billions of tons and the Rb content of which exceeds several times that of other countries are situated in the Verkhnekamsk salt region. The aim of the present paper is not only to show the newest applicabilities of Rb, but also to spur on the discovery of further applicabilities of this element, not yet completely investigated. The use of Rb in the production of semi-conductors, luminophores,

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Rubidium. Use in Science and Engineering

SOV/64-59-4-18/27

electron tubes, and other types of tubes is described. In the scintillation technique rubidium chloride is used, while rubidium salts are used for the production of photocathodes and photoelectric amplifiers. Rubidium salts are also used in the production of optic materials for the infrared technics. Rb and its salts have an important applicability in catalysis. By means of the radioactive Rb-isotopes some investigations were carried out. Among other things the application possibilities of Rb as in radio engineering, medicine, metallurgy, and microchemistry are mentioned and explained with the aid of publication data. There are 90 references, 17 of which are Soviet.

Card 2/2

STEPIN, B.D.; GIL'DENBLAT, I.A.; SHCHENEV, P.T.

Production of stannic oxide by direct oxidation of the metal.
Khim.nauka i prom. 4 no.4:549-551 '59. (MIRA 13:8)

1. Khimicheskiy zavod imeni Voykova.
(Tin oxide)

S/078/00/005/001/017/045/XX
 EC04/E060

AUTHORS: Stepin, B. D., Tartakovskaya, A. M., Plyushchev, V. Ye.

TITLE: Reversibility of the Lyotropic Series of Alkali Metals

PERIODICAL: Zhurnal neorganicheskoy khimii, 1960, Vol. 5, No. 7,
 pp. 1612-1617

TEXT: The authors attempted to ascertain whether the reversibility of the lyotropic series $Cs^+ > Rb^+ > K^+ > Na^+ > Li^+$ on phosphoric acid cation exchangers, claimed in publications (Refs. 4-6), was really possible. This phenomenon would be important for the industrial cleaning of rubidium salts from potassium impurities. The authors carried out their tests with a phosphoric acid cation exchanger of the type $P_4(RF)$, which was pre-treated in compliance with $\Gamma OCT 5695-53$ (GOST 5695-53). Mixtures consisting of equal volumes of KCl and RbCl solutions were introduced into a column filled with RF in H form, and after 24 hours the column was washed out by means of 0.1 HCl at a rate of 0.4 ml/min. K and Rb were determined in the eluate by a flame photometer consisting of atomizer, $UM-2$ (UM-2) monochromator, $ЭВ$ (VEI) photomultiplier, and mirror galvanometer. A

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Reversibility of the Lyotropic Series of
Alkali Metals

S/078/60/005/007/042/043/XX
B004/B060

reversal of the lyotropic series was not observed. Potassium was eluted earlier than rubidium. Separation is rendered difficult due to the small distance between the two fronts. At a ratio of $KCl : RbCl = 1 : 9$, a drop in the sorption isotherm was only observed at the rear front of K. Similarly, no reversal was established in methanol solution or at increased temperature. The authors found in the course of their experiments that on conversion of the cation exchanger into Rb form not all hydrogen ions are replaced by rubidium, although there was the same rubidium concentration both at the inlet and outlet of the column. They explain this by ion exchange between the functional groups of surface and interior of exchanger grains. The RF cation exchanger contained acid groups with different degrees of dissociation. There are 6 figures, 2 tables, and 9 references: 5 Soviet and 4 US.

ASSOCIATION: Moskovskiy institut teknoy khimicheskoy tekhnologii im. M. V. Lomonosova, Kafedra tekhnologii redkikh i rasseyannykh elementov (Moscow Institute of Fine Chemical Technology, imeni M. V. Lomonosov, Chair of Technology of Rare and Trace Elements)

SUBMITTED: March 27, 1959

Card 2/2

S/078/60/005/010/004/021
B004/B067

AUTHORS: Stëpin, B. D., Chernyak, A. I.

TITLE: Investigation of the Process of Iridium Chlorination in the Production of Its Trichloride

PERIODICAL: Zhurnal neorganicheskoy khimii, 1960, Vol. 5, No. 10, pp. 2157-2161

TEXT: The authors of this paper wanted to test a method given by G. Brauer (Ref. 3). 99.84 - 99.94% refined iridium was chlorinated by means of ГОСТ 6718-53 (GOST 6718-53) chlorine at 400 - 650°C. The apparatus is schematically shown in Fig. 1. A ПРК-2 (PRK-2) mercury quartz lamp and three bactericide tubes of the type БУФ-15 (BUF-15) with a maximum light emission at 254 mμ and provided with a УФС-1 (UFS-1) light filter for absorbing the visible range of the spectrum, served as light source. Besides, the authors tried to activate chlorine by means of dark electric discharges of ozonizers. The results of the experiments are given in Tables 1 - 4 and Fig. 2. Single chlorination of iridium gave lower yields

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Investigation of the Process of Iridium
Chlorination in the Production of Its
Trichloride

S/078/60/005/010/004/021
B004/B067

(maximum: 9%). As is shown in Fig. 2, the reaction rate rapidly decreases due to the formation of a chloride layer which inhibits chlorine diffusion. Chlorine activation by means of dark electric discharges, admixture of sulfur, or ultraviolet irradiation were inefficient. An addition of CO, however, led to a rapid and complete chlorination (95%). For 1 g of Ir and 40 ml/min of Cl₂, 4.5 - 5.5 ml/min of CO were added. CO acts as catalyst also without irradiation. An excessive CO content (11 ml/min) reduces the yield of IrCl₃ owing to the formation of stable iridium carbonyls. There are 2 figures, 4 tables, and 3 references: 1 Soviet and 2 German.

ASSOCIATION: Khimicheskii zavod im. Voykova (Chemical Works imeni Voykov)

SUBMITTED: July 15, 1959

Card 2/2

STEPIN, B.D.; PLYUSHCHEV, V.Ye.

Determination of small amounts of potassium in rubidium chloride by means of flame photometry. Zhur. anal. khim. 15 no.5:556-560 S-O '60. (MIRA 13:10)

1. M.V. Lomonosov Moscow Institute of Fine Chemical Technology.
(Potassium--Analysis) (Rubidium chloride)
(Flame photometry)

STEPIN, B.D.; GRINSHTEYN, S.A.

Production of tin dichloride by the direct chlorination of the
metal. Khim.prom. no.1:46-51 Ja '61. (MIRA 14:1)
(Tin chloride)

STEIN, B.D.; GIL'DENBLAT, I.A.; SHCHERBAV, I.N.

Production of stannic oxide by the direct high temperature
oxidation of metallic tin. Trudy NII TI no.35:162-170
'61. (MIRA 14:18)

(Tin oxide)

STEPIN, B.D.; FLYUSHCHEV, V.Ye.

Applicability limits for the method of additions in the flame photometric determination of alkaline elements. Izv.vys.ucheb.zav.;khim.i khim.tekh. 4 no.4:569-573 '61. (MIRA 13:1)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni Lomonosova, kafedra khimii i tekhnologii redkikh i rasseyanykh elementov.

(Alkali metals--Analysis) (Flame photometry)

S/078/51/006/002/013/017
B017/B054

AUTHORS: Stepin, B. D., Plyushchev, V. Ye.

TITLE: Coprecipitation of Microquantities of Potassium With Crystalline Precipitates of Rubidium Salts

PERIODICAL: Zhurnal neorganicheskoy khimii, 1961, Vol. 6, No. 4, pp. 462-468

TEXT: The authors studied the distribution of potassium in crystalline precipitates of permanganate, tetraoxalate, rubidium alum, and nickel rubidium picromerite. The initial salts were purified by twofold crystallization. Potassium was determined flame-photometrically with the ИСП-51 (ISP-51) spectrograph. The distribution coefficients were calculated by the

formulas $D_{(K)/Rb} = \frac{x(b-y)}{y(a-x)}$ and $\lambda_{(K)/Rb} = \frac{\log a(b-y)}{\log b(a-x)}$, where D = Khlopin constant, $\lambda_{(K)/Rb}$ = Dermer-Hoskins constant, a, b = corresponding micro- and

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Coprecipitation of Microquantities of
Potassium With Crystalline Precipitates
of Rubidium Salts

S/078/61/006/002/0:3/017
B017/B054

macroquantities of components in the solution before crystallization, x, y = corresponding amounts of ~~micro-~~ and macrocomponents in the precipitate, $a-x, b-y$ = corresponding amounts of micro- and macrocomponents in the solution after crystallization. The distribution coefficients of the systems $\text{KMnO}_4 - \text{RbMnO}_4 - \text{H}_2\text{O}$; $\text{KH}_3(\text{C}_2\text{O}_4)_2 - \text{RbH}_3(\text{C}_2\text{O}_4)_2 - \text{H}_2\text{O}$; $\text{K}_2\text{SO}_4 \cdot \text{Al}_2(\text{SO}_4)_3 - \text{Rb}_2\text{SO}_4 \cdot \text{Al}_2(\text{SO}_4)_3 - \text{H}_2\text{O}$, and $\text{K}_2\text{SO}_4 \cdot \text{NiSO}_4 - \text{Rb}_2\text{SO}_4 \cdot \text{NiSO}_4 - \text{H}_2\text{O}$ were determined. It was found that the constants depended on temperature. The fractional crystallization of permanganate and alum was found to be suitable for the production of purest rubidium salts. The separation of rubidium and potassium by fractional crystallization of tetraoxalates is impossible in principle. Purification of rubidium alums from potassium is best made from saturated solutions at 40 - 50°C. A K-enriched solid phase is formed on the surface at higher temperature. Rubidium can be separated from potassium by fractionating the double sulfates of rubidium and nickel at a temperature below 40 - 50°C. M. D. Delepin and G. I. Gorshteyn are

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Coprecipitation of Microquantities of
Potassium With Crystalline Precipitates
of Rubidium Salts

S/076/61/006/002/013/017
B017/B054

mentioned. There are 6 tables and 24 references: 9 Soviet, 4 US, 1 British,
5 German, and 2 Japanese.

SUBMITTED: October 13, 1959

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Card 3/3

STEPIN, B.D.; TIKHONOVA, Ye.A.; PLYUSHCHEV; V.Ye.

Preparation of rubidium hexadecachlorotriantimonide and its
coprecipitation with potassium chloride. Zhur.neorg.khim. 6
no.4:890-896 Ap '61. (MIRA 14:4)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni
M.V.Lomonosova, Katedra tekhnologii redkikh i rasseyannykh
elementov.

(Rubidium compounds)

STEPIN, B.D.; PLYUSHCHEV, V.Ye.

Spectrophotometric study of reactions of rubidium and potassium
chlorides with iodine bromide in solution. Zhur.neorg.khim. 6
no.9:2187-2196 S '61. (MIRA 14:9)
(Rubidium chloride) (Potassium chloride) (Iodine bromide)

S/828/62/000/000/017/017
EO71/E135

AUTHORS: Stepin, B.D., and Plyusnchev, V.Ye.
TITLE: A polyhalide method of production of rubidium salts
with a reduced content of potassium
SOURCE: Razdeleniye blizkikh po svoystvam redkikh metallov.
Mezhvuz. konfer. po metodam razdel. blizkikh po svoyst.
red. metallov. Moscow, Metallurgizdat, 1962, 200-213.
TEXT: Since there is no simple industrial method of producing
rubidium salts free from admixtures of potassium, the authors
investigated the possibility of this separation (in the case of a
large excess of rubidium) using polyhalogenides and in particular
rubidium chlorobromiodate ($\text{Rb} [\text{I}(\text{ClBr})] \cdot \text{H}_2\text{O}$). They developed an
easy method of producing this salt: whilst stirring continuously,
bromine is added in small portions (in a total quantity of 3% in
excess of the stoichiometric amount) to carefully ground iodine;
to the iodine bromide so obtained, a hot (70-80 °C) concentrated
solution of rubidium chloride is added. On cooling to about 0 °C,
small orange crystals of the salt are precipitated. Some properties
Card 1/3

A polyhalide method of production ...

S/828/62/000/000/017/017
E071/E135

of this salt were determined. It was found that even highly concentrated solutions will not yield a similar potassium salt precipitate. Coprecipitation of potassium with rubidium chlorobromoiodate, tested under various conditions, was found to take place only to a very small extent. In tests with aqueous saturated solutions, lithium and sodium were found to behave similarly to potassium but, due to a lower solubility and a higher stability of Cs [I(ClBr)] in comparison with rubidium salt, some enrichment of the precipitate in caesium takes place. If the starting commercial rubidium chloride contains 2-5% potassium chloride, then, to remove the latter, it is necessary to carry out a single precipitation of $\text{Rb [I(ClBr)]} \cdot \text{H}_2\text{O}$ from an aqueous solution and this should be followed by a single precipitation from an acetic acid solution (0.2-1.0 N CH_3COOH). The final product will contain less than 0.0002% potassium, sodium, lithium and traces of calcium. On decomposing the rubidium salt by heating to 300-350 °C, some bromine is retained in the rubidium chloride formed. This is removed by passing chlorine or chlorine - air mixture through the aqueous solution of rubidium chloride.

Card 2/3

A polynalide method of production ... S/628/62/000/000/017/017
E071/E135

The end product contains less than 0.02% rubidium bromide.
In comparison with the hexachlorostannate method the proposed
process is considerably cheaper.
There are 2 figures and 5 tables.

Card 3/3

S/064/62/000/006/003/003
B144/B138

AUTHORS: Stepin, B. D., Plyushchev, V. Ye., Ivanova, Yu. A.

TITLE: Extractive separation of rubidium and potassium

PERIODICAL: Khimicheskaya promyshlennost', no. 6, 1962, 18 - 22

TEXT: The distribution of organic K and Rb compounds is studied between the aqueous phase and alcohols, ketones and esters of C_2-C_5 monocarboxylic acids.. Rb and K carbonates obtained from $RbCl$ and K_2CO_3 respectively, were dissolved in H_2O and heated to $50 - 60^\circ C$ while stirring; organic acid was added up to a pH of 6 - 6.5, then excess acid (2 - 4 ml) was added, the solution boiled down, and the residue mixed with acetone. Extraction was performed in separating funnels. The solvent is saturated with H_2O before being used for the extraction so that equilibrium is established exclusively by the organic solvent and the test substance. The salts are converted to sulfates to determine their content in both phases. The calculated separation coefficient, β , agrees with the usual values, but may be changed significantly in the presence of two 1-anion
Card 1/2

Extractive separation of ...

S/064/62/000/006/003/003
B144/B138

salts owing to salting-out of 1 component. A method of determining its real value has still to be found. The distribution coefficient, α , is mostly and β is always less than unity. Solubility and extraction degree, Ψ , increases from acetates to isovalerates; Ψ is independent of the salt concentration in the aqueous phase. A definite selectivity was observed in butyrates as to the extraction of the cation from the organic phase. β decreases significantly with decreasing concentration of the initial solution from 1.0 - 0.5 mole/liter. α mostly increases with rising salt concentration in the aqueous phase. This is probably due to partial dehydration and to the forming of bonds between solvent and salt and confirmed by the loss in volume observed. The strong effect of free acids on α is established in the butyrate-cyclohexanone system. Ψ increases as a function of the acidity, particularly, in concentrated salt solutions which favor the forming of acid $n\text{RCOOMe} \cdot m\text{RCOOH}$ -type compounds and reduce the degree of dissociation. The effect of the type of cation decreases with increasing number of C atoms. Alcohols were the most efficient solvents. Tests on extractive separation of K rhodanides also yielded good results. There are 1 figure and 5 tables.

Card 2/2

5 2100

33280
S/078/62/007/002/010/019
B119/B110

AUTHORS: Stepin B D, Plyushchev, V. Ye

TITLE: Some properties of rubidium iodine chlorobromide and its
cocrystallization with potassium

PERIODICAL: Zhurnal neorganicheskoy khimii, v 7, no. 2, 1962, 394 - 400

TEXT: The study of the properties of $\text{Rb}[\text{I}(\text{Cl Br})]$ is of interest for the purification of rubidium salts from K impurities, since analogous compounds with K are not existent in water. RbCl (containing 0.005% K, 0.02% Cs, 0.004% Na) with different contents of KCl (checking of K, Li, and Na contents with flame photometer; ФЭП-1 (FEP-1) auxiliary apparatus; УМ-2 (UM-2) monochromator with photomultiplier could not be used) was converted to $\text{Rb}[\text{I}(\text{Cl Br})]$. (ГОСТ 4159-48 (GOST 4159-48) I powder was mixed with (ГОСТ 4109-48 (GOST 4109-48) Br and after removal of the excess Br in N_2 flow the concentrated RbCl solution was added under continuous stirring at 70 - 80°C. The $\text{Rb}[\text{I}(\text{Cl Br})]$ formed was precipitated as fine orange-coloured crystals by cooling to ~0°C. The product was studied as to: K content (flame photometry), content of halogens (potentiometric

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S/078/62/007/002/010/019
B119/B110

Some properties of rubidium...

titration), hydrate water (titration with Fischer's reagent), solubility and differential thermogram (in the pyrograph of F. V. Syromyatnikov (Ref. 12: Avt. svid. SSSR No. 62899 (1943)). УПМ ("UPI") fluorized oil was used as sealing liquid. Results: Solubility of $\text{Rb}[\text{I}(\text{Cl Br})]$ in water at $+0.1^\circ\text{C}$: 34.7% by weight; at 70°C : 87.4% by weight. Analytically found formula of the product: $\text{Rb}[\text{I}(\text{Cl Br})] \cdot \text{H}_2\text{O}$. Melting point $207.5 - 209.0^\circ\text{C}$. (After dehydration at 130°C : melting point $216 - 218^\circ\text{C}$). The thermogram of $\text{Rb}[\text{I}(\text{Cl Br})]$ shows a small endothermic effect at 112.5°C and a strong effect at 231.5°C (corresponding $\text{Rb}[\text{I}(\text{Cl Br})] \rightleftharpoons \text{RbCl} + \text{IBr}$). Cocrystallization of K: A K content of 10.02% in the initial RbCl decreases (after thermal decomposition of the $\text{Rb}[\text{I}(\text{Cl Br})]$ precipitated) to 0.04% in the final RbCl . An initial K content of 0.02% decreases to 0.0005%. In the presence of acetic acid in the reaction mixture ($\text{pH} = 2.0 - 2.7$) the K content in the final product (RbCl) is still further reduced (from 0.02 - 0.05% to 0.0002%). Thus, RbCl is purified from Li and Na to the same extent; whereas Cs is enriched. V. G. Khlopit is mentioned. There are 4 figures, 5 tables, and 16 references: 9 Soviet and 7 non-Soviet. The four most recent references to English-language publications read as follows: H. Wells, H. W. Wheeler, Amer. J. Sci., 43,

Card 2/3

Some properties of rubidium...

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S/078/62/007/002/010/019
B119/B110

475 (1892); I. M. Kolthoff, H. Yutzu. Ind. Eng. Chem. Anal. Ed., 2, 75
(1937); H. W. Cremer, D. R. Duncan. J. Chem. Soc., 1857 (1931);
H. W. Cremer, D. R. Duncan. J. Chem. Soc., 2031 (1932).

SUBMITTED: February 27, 1961

X

Card 3/3

37386

S/020/62/143/006/019/024
B106/B138

114100
AUTHORS:

Plyushchev, V. Ye., Stepina, S. B., Stepin, B. D., and
Lepeshkova, L. I.

TITLE:

Heterotripolyhalides of alkali elements with similar properties and their importance for the production of pure rubidium and cesium compounds

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 143, no. 6, 1962, 1364-1367

TEXT: The possibility of producing pure Rb and Cs compounds via complex heterotripolyhalides is thoroughly discussed with the aid of 27 references. A method developed by the authors (V. Ye. Plyushchev, B. D. Stepin, Author's certificate USSR no. 132627 (1960); B. D. Stepin, V. Ye. Plyushchev, Author's certificate USSR no. 140051 (1961)) provides for the production of Rb preparations containing only 0.0002% potassium, from industrial RbCl containing 2 - 3% K. Rb preparations of such high purity had not been obtained by methods described before. In the present simple and economic procedure, RbCl is twice (first in aqueous solution, then in 0.5 M acetic acid) converted at 90°C into the complex $\text{Rb}[\text{I}(\text{ClBr})] \cdot \text{H}_2\text{O}$.

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S/020/62/143/006/019/024
B106/B138

Heterotripolyhalides of alkali...

which is then decomposed by heating to 400°C. A further method developed by the authors for producing pure cesium bromide by precipitating the complex cesium di-iodo bromide, CsBrI_2 , from aqueous-alcoholic solution (S. B. Stepina, B. D. Stepin, L. I. Lepeshkova, V. Ye. Plyushchev, Author's certificate USSR no. 138927 (1961)) is discussed in detail. Two applications of this process produce cesium bromide of 99.95% purity containing 0.02% Rb and <0.005% K, 0.002% Na, and 0.002% Li (the initial CsBr containing 5% Rb and up to 1.5% other alkali elements). CsBr losses in this process are lowest, so the cost of producing high-purity cesium salts from the industrial product is not more than 10% higher than that of the initial material. Advantages of the new method: (1) high purification factor (10 - 20), (2) high selectivity of CsBr isolation from mixtures with other alkali elements, hitherto not achieved by other methods, and (3) no additional operations are needed since no nonvolatile ions participate in the purification process. Therefore, the heterotripolyhalides of the alkali elements are very promising compounds for the removal of potassium microamounts from Rb salts and for the production of Cs salts which are practically free from impurities of other alkali elements. There is 1 table. The most important English-language references read as

Card 2/3

Heterotripolyhalides of alkali...

S/020/62/143/006/019/024
B106/B138

Follows: H. L. Wells, Am. Chem. J., 26, 268 (1901); M. Ischibaschi, T. Jamamoto, T. Hara, Bull. Inst. Chem. Res. Kyoto Univ., 37, no. 2, 145 (1959); M. Ischibaschi, T. Jamamoto, T. Hara, Bull. Inst. Chem. Res. Kyoto Univ., 37, no. 3, 153 (1959); H. W. Foote, M. Fleischer, J. Phys. Chem., 44, 640 (1940).

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova (Moscow Institute of Fine Chemical Technology imeni M. V. Lomonosov)

PRESENTED: December 13, 1961, by I. V. Tananayev, Academician

SUBMITTED: December 6, 1961

Card 3/3

S/064/63/000/002/005/005
B117/B186

AUTHORS: Stepin, B. D., Blyum, G. Z., Shvarts, M. M.

TITLE: Methods of purifying silicon dioxide from microimpurities

PERIODICAL: Khimicheskaya promyshlennost', no. 2, 1963, 58 - 62

TEXT: This is a survey of western and Soviet publications issued mainly from 1942 to 1962 (some earlier patents and papers being also mentioned). Description are given of: the effect of raw materials on the quality of quartz products, methods of purifying natural quartz; methods of purifying the raw material in the production of synthetic silicon dioxide; methods of obtaining high-purity silicon dioxide from high-purity silicon compounds. There are 2 tables and 71 references.

Card 1/1

STEPIN, B.D.; BLYUM, G.Z.; SHVARTS, M.M.

Methods for the removal of microimpurities from silicon
dioxide. Khim. prom. no.2:138-142 F '63. (MIRA 16:7)

(Silica)

L 36701-65 EWT(m)/EWP(b)/EWP(t) IJP(o) JD

ACCESSION NR: AP5005014

S/0078/65/010/002/0472/0475

AUTHOR: Kuznetsova, G. P. ; Stepin, B. D.

23

22

B

TITLE: The RbBr-IBr-H₂O system at 25C

SOURCE: Zhurnal neorganicheskoy khimii, v. 10, no. 2, 1965, 472-475

TOPIC TAGS: rubidium, iodine, bromide, solubility, physical properties, dissociation, density, refractive index

ABSTRACT: Solubility in the RbBr-IBr-H₂O system at 25C was studied and the solubility isotherm was constructed (fig. 1). It consists of a short section corresponding to the crystallization of RbBr (points 1-5), a mixture of RbBr + Rb(IBr₂) (point 6), and the main portion of the isotherm corresponding to the crystallization of the congruent soluble anhydrous Rb IBr₂ (points 7-20). Mixtures containing 54.67% IBr formed solid phases (points 21, 22). The solubility of Rb IBr₂ in water is 50.3 wt.%; its refractive index = 1.418, density = 4.29 ± 0.02 gm/cm³. At 233C it dissociated to RbBr + IBr. Orig. art. has: 3

Card 1/3

L 36701-65

ACCESSION NR: AP5005014

figures and 1 table

ASSOCIATION: Vsesoyuzny*y nauchno-issledovatel'skiy institut khimicheskikh reaktivov i osobo chisty*kh khimicheskikh veshchestv (All-Union Scientific Research Institute of Chemical Reactants and Extra Pure Chemical Materials)

SUBMITTED: 24Aug63

ENCL: 01

SUB CODE: G.C

NR REF SOV: 004

OTHER: 003

Card 2/3

SIBELIN, K.D.; KIROV, A.V.; SAE, T.M.

Temperature of rubidium diiodate dissociation. Zhur. neorg. khim.
N. no. 7:1603-1606 J1 '66. (MIRA 18:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut khimicheskikh
reaktivov i osobo chistykh khimicheskikh veshchestv.

KONETSOVA, G.P.; SHVARTS, M.M.; STEPIN, B.D.

Preparation of highly pure sodium and potassium monochromates.
Izv. AN SSSR. Neorg. mat. 1 no.11:1938-1944 N '65.
(MIRA 18:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut khimicheskikh
reaktivov i osobochistyykh khimicheskikh veshchestv. Submitted
May 14, 1965.

STEIN, B.L.; SYUDOMOV, V.Ye.; FAKHYEV, A.A.

Anion halogenates of alkali metals and ammonium. Vop.khit.
24 no.11:1881-1907 N '65.

(MIRA 19.1)

I. Vsesoyuznyy nauchno-issledovatel'skiy institut khimicheskikh
reaktivov i osobo chistykh khimicheskikh veshchestv.

GALIMOV, M.D.; KIRK, L.D.; STEPIN, B.V.; ZAPONOVA, K.F.

Behavior of arsenic and rare elements during the oxidizing
roasting and sulfatization of dusts and sublimates. TSvet.
met. 34 no.12:61-67 D '61. (MIRA 14:12)
(Copper industry--By-products)
(Fly ash)

STEPIN, F. T.

USSR/Agriculture - Livestock

Card 1/1 : Pub. 123 - 3/17

Authors : Stepin, F. T.

Title : ~~Improvement of conditions~~
Basic economical problems and the methods of increasing efficiency at livestock collective farms in Kazakhstan

Periodical : Vest. AN Kaz. SSR 11/3 (108), 8-18, Mar 1954

Abstract : An analysis of unsatisfactory conditions at livestock collective farms is given. Methods for improvement of such conditions and for increasing efficiency in production are suggested. Graph; table.

Institution : ...

Submitted : ...

STEPIN, I.A.

Unification of containers. Standartizatsia no. 4:76 J1-Ag '56.
(Containers-Standards) (MLBA 9:11)

STEPIN, I.A. (Babushkin)

Standardization of packing crates. Zhel.dor.transp.39 no.2:79

F '57.

(MLRA 10:3)

(Packing for shipment)

STEPIN, I.F.

I-13

USSR/Chemical Technology - Chemical Products and Their
Application. Food Industry.

Abs Jour : Ref Zhur - Khimiya, No 1, 1958, 2993

Author : Kurasova, V.V., Stepin, I.F.

Inst : Moscow Technological Institute of the Meat and Dairy
Industry

Title : Microscopic Alteration of Meat During Freezing at Diffe-
rent Stages of Seasoning.

Orig Pub : Sb. stud. rabot Mosk. tekhnol. in-ta myas. i moloch. prom-
sti, No 4, 4-6

Abstract : In meat that is kept at 3° the most important changes
occur during the 48 hours following slaughtering: con-
tracted muscle fibers disappear, transversal and longi-
tudinal striation becomes attenuated, in the nuclei the
fibrillar structure of chromatin becomes finely granular

Card 1/2

/USSR/Chemical Technology - Chemical Products and Their
Application. Food Industry.

I-13

' Abs Jour : Ref Zhur - Khimiya, No 1, 1958, 2993

and pulverulent. Freezing accelerates these alterations by about 24 hours, in comparison with meat kept at + 3°. Specific changes on freezing are characterized by formation of ice crystals and rupturing of muscle tissues; most intensive crystal formation taking place in meat that is still warm. Morphological changes in meat frozen at -23° are more pronounced than at -12°.

Card 2/2

STEPIN, I.G.; YUDIN, G.M.

Additional prospecting for oil layers by means of hydrodynamic studies (hydrogeological prospecting). Geol.nefti i gaza 6
no.3:48-49 Mr '62. (MIRA 15:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy neftegazovyy institut.
(Water, Underground) (Prospecting)

STEPIN, I.G.; SHCHERBAKOV, G.V.

More accurate data on the geology of the D_3^{II} and D_5^V layers in the Sokolovogorsk field including the results of the hydrodynamic studies. Nauch.-tekhn. sbor. po dob. nefti no.16:3-8 '62. (MIRA 15:9)

1. Vsesoyuznyy neftegazovyy nauchno-issledovatel'skiy institut.
(Sokolovogorsk region—Petroleum geology)

JOHAN, I.G.; JOHAN, G.N.

Combined study of layer 5 in the Bary field. Neftogaz. geol.
i geofiz. no. 5-57-62 163. (MIRA 17:5)

1. Vsesoyuznyy neftogazovyy nauchno-issledovatel'skiy institut.

STEPIN, I.G.

Using hydraulic prospecting in studying the geology of oil
fields. Sov. geol. 7 no.4:97-108 Ap'64. (MIRA 17:5)

STEPIN, Kh. Ye.

Catalytic transformations of *n*-heptane and *n*-octane in the presence of platinised charcoal. B. A. Kazanskiy, A. I. Liberman, I. F. Bulanova, V. F. Aleksanyan and Kh. E. Stepin (*Dokl. Akad. Nauk SSSR*, 1954, 85, 77-80). *n*-Heptane and *n*-octane are passed at 300° at different rates over platinised charcoal containing 20% Pt or 20% Pt and 2% Fe, and the products of the reaction are analysed. The products contain 10-11% of alicyclic, <2% of unsaturated, and 1-5% of aromatic hydrocarbons. A certain amount of aliphatic branched-chain isomers is also formed but the bulk of the hydrocarbon passes unchanged through the catalyst. S. K. Lachowicz.

L 21794-66 EWT(1)/EWA(h) GW

ACC NR: AP6002922

(N)

SOURCE CODE: UR/0286/65/000/024/0083/0083

AUTHORS: Naumenko-Bondarenko, I. I.; Gorin, V. P.; Usacheva, A. M.; Stepin, M. D.; Yurkovetskiy, S. G.; Aksenov, M. Z.; Yefremov, V. V.; Kolentsev, A. M.; Baryshev, Yu. M.; Lad'ina, V. M.; Fel'dman, Yu. S.

ORG: none

TITLE: A ground gravimeter Class 42, No. 177106

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 24, 1965, 83

TOPIC TAGS: gravimetric analysis, measuring instrument, measurement accuracy
gravimeter

ABSTRACT: This Author Certificate presents a ground gravimeter containing a quartz elastic sensitive system, units of distance control and control of the rotation angle of a micrometric screw, and an assembly of a photoelectric device with an illuminator. The design increases the precision of the measurements and makes possible the determination of the errors of the distance transmission. The unit of distance control in the gravimeter has precision multiple-turn linear potentiometers interconnected in a bridge circuit. One of the potentiometers is mounted in the gravimeter and the other on a control panel. The rotors of these potentiometers are connected with a tachometer. To reduce the temperature effects on the quartz sensitive system, the latter system is insulated from the photoelectric device.

SUB CODE: 08/ SUBM DATE: 21Jan64

Card 1/1

UDC: 550.831

SHOKOVA, E.A.; KHROMOV, S.I.; STERIN, Kh.Ye.; KAZANSKIY, B.A.

Contact conversions of cycloöctane in the presence of an alumina-chromium oxide catalyst. Neftekhimiia 1 no.1:28-32 Ja-F '61.
(MIRA 15:2)

1. Moskovskiy gosudarstvennyy universitet, kafedra khimii nafti
i komissiya po spektroskopii AN SSSR.
(Cycloöctane) (Catalysts)

20422

24.2110 (1153, 1160, 1164)

S/109/60/005/012/020/035
E192/E382

AUTHORS: Tkach, V.K., Stepin, L.D. and Kazanskiy, V.B.

TITLE: Resonator Method of Measuring the Permittivity and
Loss Tangent of Liquid Dielectrics

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol. 5,
No. 12, pp. 2009 - 2014

TEXT: The resonator method provides means of accurate measurement of the permittivity and losses in dielectrics at microwaves. However, the measured sample is usually in the form of a disc and the method cannot be easily employed for measuring the permittivity and losses in liquids. It is proposed, therefore, that the measured sample be cylindrical and situated in the centre of the resonator parallel to its axis. For the purpose of the derivation of the formulae for the measurement, it is assumed that the resonator contains waves of the type H_{01n} . The solution of the Maxwell equations for the region occupied by the dielectric ($0 < r < b$ where b is the radius of the sample) is given by

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S/109/60/005/012/020/035
E192/E382

Resonator Method of Measuring the Permittivity and Loss Tangent
of Liquid Dielectrics

$$\begin{aligned} H_{z\alpha} &= -CJ_0(kr) \sin \beta z, \\ H_{r\alpha} &= \frac{i\beta}{k} CJ_1(kr) \cos \beta z, \\ E_{\phi\alpha} &= \frac{i\omega}{ck} CJ_1(kr) \sin \beta z, \end{aligned}$$

where:

$$k^2 = \frac{\omega^2}{c^2} \epsilon - \beta^2 \quad (1) .$$

The fields in the region occupied by the air ($b < r < a$ where
 a is the internal radius of the resonator) are expressed by:

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S/109/60/005/012/020/035
E192/E382

Resonator Method of Measuring the Permittivity and Loss Tangent
of Liquid Dielectrics

where:

$$k_o^2 = \frac{\omega^2}{c^2} - \beta^2 \quad (2).$$

In these expressions, ω is the angular frequency,
 c is the velocity of propagation,
 $\beta = 2\pi/\lambda_{B\Omega}$ is the propagation constant,
 $\lambda_{B\Omega}$ is the wavelength in the resonator.

The unknown k can be determined from the boundary
condition at $r = b$ and $r = a$. These conditions lead
to the following expression:

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S/109/60/005/012/020/035

E192/E382

Resonator Method of Measuring the Permittivity and Loss Tangent of Liquid Dielectrics

$$kb \frac{J_0(kb)}{J_1(kb)} = k_0 b \frac{J_0(k_0 b)}{J_1(k_0 b)} \frac{1 - \frac{J_1(k_0 a) Y_0(k_0 b)}{Y_1(k_0 a) J_0(k_0 b)}}{1 - \frac{J_1(k_0 a) Y_1(k_0 b)}{Y_1(k_0 a) J_1(k_0 b)}} \quad (3)$$

The quantity kb can be evaluated from Eq. (3). A special table is given for this purpose. The tangent of the loss angle $\text{tg } \delta$ is approximately expressed by:

$$\text{tg } \delta = \frac{W_0}{W_{\text{in}}} \left(\frac{1}{Q} - \frac{1}{Q_0} \right) \quad (7)$$

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S/109/60/005/012/020/035

E192/E382

Resonator Method of Measuring the Permittivity and Loss Tangent of Liquid Dielectrics

where W is the energy stored in the region $b < r < a$,
 W_D is the energy stored in the region $0 < r < b$,
 Q is the quality factor of the resonator with the sample,
 Q_0 is the quality factor of the resonator without the
 sample.

The final theoretical expression for the loss tangent is in
 the form:

$$\lg \delta = \frac{k^2 a^2 J_0^2(kb) F_1(k_0 a)}{k_0^2 e b^2 J_0^2(k_0 b) F_1(kb)} \left[\frac{1}{Q} - \frac{1}{Q_0} \right]. \quad (11)$$

The method proposed above was investigated experimentally.
 The resonator used in the experiments was made of brass and
 had an internal diameter $2a = 5.908$ cm and a length of
 Card 5/7

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S/109/60/005/012/020/035
E192/E382

Resonator Method of Measuring the Permittivity and Loss
Tangent of Liquid Dielectrics

14.9 cm. The resonator operated in the H_{011} mode and its quality factor was 3790; the position of the plunger in the resonator could be varied by means of a micrometer screw and could be determined with an error of ± 0.002 mm. The resonant frequency of the system could be accurately measured by means of a cavity wavemeter. The permittivity and the loss tangent of the sample were based on the determination of the resonant wavelength and the magnitude of the quality factors of the resonator itself and the resonator with the sample. Some solid and liquid dielectrics were investigated (organic glass, ebonite, ethyl alcohol, benzole acetone and distilled water). The measured values are indicated in a table. From this it is seen that the results are in good agreement with the data available from literature. The method

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S/109/60/005/012/020/035
E192/E382

Resonator Method of Measuring the Permittivity and Loss Tangent
of Liquid Dielectrics

permits the measurement of permittivity with an average square
error of not more than 3% and that of the loss tangent with
an error of not more than 9%. There are 2 figures, 2 tables
and 9 references: 8 Soviet and 1 non-Soviet.

SUBMITTED: January 16, 1960

Card 7/7

S/109/62/007/001/024/027
D266/D301

94.2110

AUTHORS: Kazanskiy, V.B., and Stepin, L.D.

TITLE: Calculating the dielectric constant from measurements performed on an axially placed sample in a cylindrical H_{01n} resonator

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 1, 1962, 173 ~ 175

TEXT: The dielectric constant ϵ and the loss tangent $\tan \delta$ of liquid dielectrics can be obtained from measurements in a cylindrical H_{01n} resonator as explained in a previous paper of the authors and V.K. Tkach (Ref. 1: Radiotekhnika i elektronika, 1960, no. 12, 2009)

The dielectric constant is expressed there in the following form


$$\epsilon = \frac{\beta^2 + k^2}{\beta^2 + k_0^2}$$

(1)

✓B

Card 1/2

Calculating the dielectric constant ... S/109/62/007/001/024/027
D266/D301

where $\beta = 2\pi/\lambda_r$, λ_r - resonance wavelength, $k_o^2 = (\omega^2/c^2) - \beta^2$ and k 
to be determined from an implicit equation containing Bessel and Neumann functions. The purpose of the present paper is to simplify the formulas without an appreciable loss of accuracy. The simplifications result partly from the expansion of the Bessel and Neumann functions at 0 and 3.83 and partly from the tabulation of some of the functions involved. The committed error is less than 1 %. There are 1 figure and 1 Soviet-bloc reference.

ASSOCIATION: Khar'kovskiy gosudarstvenny universitet im. A.M. Gor'kogo, kafedra radiospektroskopii (Khar'kov State University im. A.M. Gor'kiy, Department of Spectroscopy)

SUBMITTED: July 17, 1961

Card 2/2

KAZANSKIY, V.E.; STEPIN, L.D.; TRACH, V.K.

Use of a new variant of the resonator method for measuring dielectric constants for the study of high molecular weight compounds. Biofizika 8 no.1:112-116 '63. (MIRA 17:8)

1. Khar'kovskiy gosudarstvennyy universitet imeni Gor'kogo.

STEPIN, Lev Dmitriyevich; KULIK, I.O., kand. fiz.-mat. nauk,
otv.red.; NESTERENKO, A.S., red.; TROFIMENKO, A.S.,
tekhn. red.

[A course of lectures on quantum radio physics] Kurs
lektzii po kvantovoi radiofizike. Khar'kov, Izd-vo
Khar'kovskogo univ., 1963. 167 p. (MIRA 17:3)

L 10755-65 EWT(1)/EPA(s)-2/EEC(t)/EEC(b)-2 Pl-L/Pt-10 IJP(c)/AFETR/SSD/AFWL/
 ASD(a)-5/AS(mp)-2/AFMD(t)/ESD(t)/ESD(gs)/ESD(dp) GG
 ACCESSION NR: AP:4046331 S/0057/64/034/010/1743/1746

AUTHOR: Stepin, L.D.

TITLE: Dielectric constant of a medium with inhomogeneous spherical inclusions

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.10, 1964, 1742-1746

TOPIC TAGS: applied mathematics, dielectric constant, electrostatic field

ABSTRACT: The author solves the problem of an inhomogeneous dielectric sphere, consisting of n spherical shells with different dielectric constants, in a uniform electric field. The solution is effected by the standard method of expressing the potential in each shell and outside the sphere as the sum of the two appropriate spherical harmonics and employing the boundary conditions to derive a recursion relation for the coefficients. From this result an expression is derived (following Lorentz) for the mean dielectric constant of a uniform medium containing randomly distributed identical spherically stratified inclusions. The final result contains a sum over the n shells of an expression involving the coefficients to be determined. It is noted that a sphere whose dielectric constant is a continuous function of the distance from the center can be approximated by a spherically stratified

1/2

L 10755-65
ACCESSION NR: AP4046331

sphere consisting of a large number of shells. Orig.art.has: 28 formulas and 1 figure.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet im.A.M.Gorkogo, Kafedra
radiospektroskopii (Khar'kov State University, Radiospectroscopy Department)

SUBMITTED: 11Jan64

ENCL: 00

SUB CODE: EM

NR REF SOV: 005

OTHER: 003

STEPIN, L.D.

Dielectric properties of a medium with inhomogeneous inclusions of
spherical shape. Zhur. tekhn. fiz. 34, no.13:1746-1746 O '64.
(MIRA 17:12)

1. Khar'kovskiy gosudarstvennyy universitet im. A.M. Gor'kogo,
Kafedra radiospektroskopii.

AP50076-55 EWT(1)/EPA(s)-2/EEC(t) Pt-7/P1-4 IJP(c) GG

ACCESSION NR: AP5007041

S/0120/65/000/001/0123/0127

AUTHOR: Kazanskiy, V. B.; Stepin, L. D.; Ugrinskiy, L. L.

TITLE: Outfit for measuring the dielectric constant^{gm} and dielectric-loss angle of liquid substances having high-loss in the 10-cm band

SOURCE: Pribery i tekhnika eksperimenta, no. 1, 1965, 123-127

TOPIC TAGS: dielectric constant, dielectric loss, 10 cm band, dielectric liquid

ABSTRACT: The instrument is based on the H_{01n} -resonator method of measurement. The test liquid in a glass or quartz tube is placed along the resonator axis. Variation of the natural frequency and Q-factor of the resonator due to the introduced specimen serves as a basis for estimating ϵ and $\text{tg } \delta$. A principal electron-tube circuit of the outfit is presented, and some design details explained. Data for distilled water, acetone, nitrobenzene, methyl and ethyl alcohols obtained with an error of $\pm 5\%$ and $\pm 17\%$ for ϵ and $\text{tg } \delta$, respectively, is compared with that published by Western researchers. Orig. art. has 5 figures and 1 table.

Card 1/2

L 47076-65

ACCESSION NR: AP5007041

ASSOCIATION: Khar'kovskiy universitet (Khar'kov University)

SUBMITTED: 10Jan64

ENCL: 00

SUB CODE: EC

NO REF SOV: 006

OTHER: 001

bjs
Card 2/2

L 54774-65 EWT(1)/EPA(s)-2/EWT(m)/EPF(c)/EPR/EWT(j)/EEC(t)/I Pg-4/Pr-4/
Ps-4/Pt-7/Pl-4 IJP(c) WW/GG/RM
ACCESSION NR: AP5015620 UR/0057/65/035/006/0996/1001

AUTHOR: Stepin, L.D. 21

TITLE: Dielectric constant of a medium with nonuniform ellipsoidal inclusions

SOURCE: Zhurnal tekhnicheskoy fiziki, v.35, no.6, 1965, 996-1001

TOPIC TAGS: electrostatic field, dielectric constant, ellipsoidal shell structure, laminated material p

ABSTRACT: This paper is a generalization of the author's earlier work on nonuniform spherical inclusions (ZhTF 34,1742,1964) to the case of nonuniform ellipsoidal inclusions. The inclusions discussed are laminated ellipsoids in which the boundaries between the laminae form a system of confocal ellipsoidal surfaces. The dielectric constant is assumed to be constant within a lamina but to vary from lamina to lamina. A system of recursion formulas is derived in a straightforward way for calculating the field of a laminated ellipsoid in a uniform external electric field, and the dielectric con

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L 54774-65

ACCESSION NR: AP5015620

stant of a uniform medium containing identical randomly oriented laminated ellipsoidal inclusions is expressed as a sum over the laminae of terms that involve coefficients to be calculated by means of the recursion formulas. The Lorentz correction is applied in calculating the dielectric constant. Results for the following special cases are presented separately: uniform ellipsoidal inclusions; ellipsoidal inclusions with two laminae; and spherical inclusions with many laminae. Generalization to the cases of laminated inclusions in the form of circular cylinders or disks is discussed briefly. An error in the earlier work on laminated inclusions (loc.cit.supra) is pointed out. Orig.art.has: 35 formulas and 1 figure.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet im.A.M.Gor'kogo
Kafedra radiospektroskopii (Radiospectroscopy Department, Khar'kov
State University)

SUBMITTED: 16Sep64

ENCL: 00

SUB CODE: ME, EM

NR REF SOV: 003

OTHER: 002

Card 2/2

L 52015-65 MPA(s)-2/EWT(1)/EEC(t) Pt-7/P1-4 IJP(c) GG

ACCESSION NR: AP5012070

UR/0057/65/035/005/0971/0972

AUTHOR: Stepin, L. D.

39
38
B

TITLE: Reply to the remarks of B. V. Vanin

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35, no. 5, 1965, 971-972

TOPIC TAGS: applied mathematics, dielectric constant, electrostatic field

ABSTRACT: The author replies to the remarks of B.V.Vanin (ZhTF, 35, 969, 1965 /See Abstract AP5012069/) concerning his earlier paper (ZhTF, 34, 1742, 1964 /See Abstract AP4046331/) on the dielectric constant of a medium with inhomogeneous spherical inclusions. He acknowledges the error in his equation (14) and the consequent errors in his equations (20), (21), and (22), thanks Vanin for pointing these out, and apologizes for having made the initial error. The author asserts that he has already given the generalization of his work to the case of ellipsoidal inclusions (ZhTF, 34, No. 6, 1965); in the present note he again gives the generalization. Vanin's remaining remarks do not directly involve the results of the work, but concern equations (10) and (12), which were taken from the literature. The

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L 52015-65

ACCESSION NR: AP5012070

author gives a brief argument to justify his use of these equations. Orig. art. has: 8 formulas.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet im. A.M.Gor'kogo, Kafedra Radiospektroskopii (Khar'kov State University, Radiospectroscopy Department)

SUBMITTED: 11Jan65

ENCL: 00

SUB CODE: EM

NR REF SOV: 003

OTHER: 000

Card 2/2 MB

NAZAROV, V.M.; STEPIN, D.S.; BOGINSKIY, I.L.

Unit for measuring the dielectric constant and the tangent of the angle of dielectric loss by liquid substances with high losses in the 10-cm range. Prikl. i tekhn. eksp. LG no.1:123-127 Ja-F '65. (MIRA 18:7)

1. Khar'kovskiy gosudarstvennyy universitet.

CHUKOV, V.V.; STEPIN, L.D.

Dielectric properties of aquatic solutions of amino acids and
albumin of the human blood plasma in decimetric wave range.
(MIRA 19:1)
Slofizika 10 no.6:979-985 '65.

1. Khar'kovskiy gosudarstvennyy universitet imeni A.M.Gor'kogo.
Submitted January 3, 1964.

APPROVED FOR RELEASE: 08/26/2000

CIA-RDP86-00513R001653220015-6"

Adjusting locomotive roller bearings. Zhel.dor.transp. 37 no.11:
18-21 N '55. (MIRA 9:2)
(Locomotives) (Roller bearings)

STEPIN, N.I., inzh.-konstruktor

Fan and dust separator for diesel locomotives. Elek.i topl.tlaga
6 no.1:18-19 Ja '62. (MIRA 15:1)

1. Kolomenskiy teplovozostraitel'nyy zavod.
(Diesel locomotives--Maintenance and repair)

BOBKOV, A.F.; STEPIN, N.I.

Use of ordinary automatic control means. Elek.i tepl.tiaga 6
no.12:26 D '62. (MIRA 16:2)

1. Nachal'nik remontno-revizionnogo tsekha uchastka energosnabzheniya Pokrovsko-Streshnevo Moskovskoy dorogi (for Bobkov).
2. Starshiy inzhener remontno-revisionnogo tsekha uchastka energosnabzheniya Pokrovsko-Streshnevo Moskovskoy dorogi (for Stepin).
(Automatic control) (Electric railroads—Current supply)

STEPIN, P.A. (Moskva)

Mechinical theory of elastic-plastic impact. Inzh.sbor. 24:222-225
'56. (MLRA 10:5)

(Impact)

STEPIN, P.A., kand.tekhn.nauk, dotsent

Designing machine parts considering plastic properties of metals.
Trudy MII no.7:66-75 '57. (MIRA 10:12)
(Machinery--Design) (Deformations (Mechanics))

STEPIN, P.A., dotsent, kand.tekhn.nauk; SNESAREV, G.A., kand.tekhn.nauk;
GRIGOLYUK, E.I., prof., doktor tekhn.nauk, retsenzent; VOSKRESENSKIY,
N.N., inzh., red.; DOBRITSINA, R.I., tekhn.red.; SOKOLOVA, T.V.,
tekhn.red.

[Economizing materials in designing machinery] Ekonomiya materialov
pri konstruirovani mashin. Moskva, Gos.nauchno-tekhn.izd-vo mashi-
nostroitel'nykh mashin, 1960. 169 p. (MIRA 14:1)

1. Chlen-korrespondent AN SSSR (for Grigolyuk).
(Hoisting machinery--Design) (Materials)

STEPIN, Petr Andreyevich; KHRUSTALEVA, N.I., red.; STOLYAROVA, M.T.,
tekhn.red.

[Strength of materials] Soprotivleniye materialov. Moskva,
Gos.izd-vo "Vysshaya shkola," 1960. 366 p.

(MIRA 14:4)

(Strength of materials)

STEIN, F. I.

Cast Iron

Technological parameters for chilled iron castings of automobile parts. (Imdy)
NAMI no. 53, 1948.

Monthly List of Russian Assassinations. Library of Congress. September 1952. UNCLASSIFIED.

STEPIN, P. I.

"Conditions for Obtaining Cast Iron with a Spheroidal Graphite Structure in Casting," Mashgiz, 1952

USSR/Metallurgy - Cast Iron, Structure May 52

"Investigation of Primary Structural Formations in Cast Iron Treated With Magnesium," P. I. Stepin, Cand Tech Sci, Laureate of Stalin Prize, NAMI

"Lizey Proizvod" No 5, pp 13-19

PA 228791
Finds that structural transformations in cast iron treated with Mg are based on binding of Mg with C and Si which causes coalescence of C and weakening of its ties with iron mass, and finally results in C crystal rate exceeding diffusion rate. States that this factor, and also action of adsorption films

(1) 228791

formed, create conditions for allotrimorphic grain growth and for giving globular form to graphite. Thus, article notes, obtaining of globular graphite in cast iron in as-cast conditions, i. e., without heat treatment, may be attained by addn of substances dissolving C and insol in Fe. Category of such substances, in addn to Mg, includes Li, Ca, Sr, and Ba, which completely convert graphite in cast iron from form of flakes into globular state, article says. Certain deviation from general rule is represented by Ce, which, despite its soly in Fe, promotes formation of globular graphite. According to article, this may be explained by formation of

(2) 228791

Stepin, P. I.
see Phase CeC₂ insol in Fe. Illustrated by numerous micrographs.

(3)

228791

STEPIN, P.L.

Internal pressure and the properties of the magnetium-
graphite cast iron. P. I. Stepin, *Litetskoe Proizvodstvo*
1953, No. 6, 30-3; ~~1953, No. 6, 30-3~~. —Bright small-
grained fracture of Mg iron is caused by failure of nodulized
graphite to break in tension, the fracture always passing
over its surface. Internal pressures (cf. Modalevich,
Litetskoe Proizvodstvo No. 2 (1952)) assocd. with the mech-
anism of graphitization of the iron are evidenced by inter-
cryst. brittleness around graphite without strengthening the
matrix. Microhardness around graphitic nodules, shown
in photomicrographs, is higher than over the rest of the
matrix on account of the hole effect produced by nodules
since a metal is always harder in the neighborhood of a
cavity. J. D. Gat]

STEPIN, P.I., kandidat tekhnicheskikh nauk.

"Piston ring materials." E.A. Sukhodol'skaia. Reviewed by P.I. Stepin. Avt.trakt.prom. no.11:32 N '54. (MLRA 8:1)

1. Nauchnyy avtomotornyy institut.
(Automobiles--Engines) (Sukhodol'skaia, E.A.)

STEPIN, P.I.

Piston rings made of high-strength cast iron for compression
ignition engines. Avt. i trakt. prom. no.11:19 N '55.
(MLRA 9:2)

1.Nauchno-issledovatel'skiy avtomotornyy institut.
(Piston rings)

128-58-6-13/17

5/11/87, 1/1

AUTHORS: Stepin, P.I., Shkol'nikov, E.M., and Levitan, M.M. Candidates of Technical Sciences.

TITLE: The Mechanism of the Formation of Nodular Graphite in Magnesium Cast Iron. (K vorposu o mekhanizme obrazovaniya sharovidnogo grafita v magniyevom chugune)

PERIODICAL: Liteynoye Proizvodstvo, 1958, Nr 6, pp 29-30 (USSR)

ABSTRACT: The authors critically analyze the theory suggested by V.P. Pavlov ("Izvestiya AN SSSR", OTN, Nr 4, 1957) and proved it wrong. The essence of this theory is that hard manganese reacts with carbon desolved in molten iron and forms manganese carbides which decompose after reaching higher temperatures leaving graphite crumbs which become round after being rolled by streams of metal. There are 8 references, 6 of which are Soviet, 1 German, and 1 English.

AVAILABLE: Library of Congress
Card 1/1 1. Cast iron-Metallurgical analysis 2. Magnesium alloys-Properties

SOV/128-58-11-13/24

AUTHOR: Stepin, P.I.

TITLE: Structural Transformations of Cast Iron in Saturation with Magnesium in the Zone of Eutectic Temperatures (Strukturnyye prevrashcheniya v chugune pri nasyshcheniiyego magniyem v zone evtekticheskikh temperatur)

PERIODICAL: Liteynoye proizvodstvo, 1958, Nr 11, pp 24-27 (USSR)

ABSTRACT: Experiments were carried out to determine the structural transformations in cast iron of different compositions, caused by magnesium saturation in the zone of eutectic and approaching temperatures. A special method was developed, consisting in the compression of a cylindrical cast iron specimen with a magnesium charge in a hermetically closed steel container. Heating of the container and melting of the magnesium created proper conditions for the determination of the value and interdependence of crystallization factors. Unlike conventional procedures, the new method makes it possible to investigate upper and lower layers of the specimen in solid, transitional and liquid condition of the cast iron. The results are described. They provide a

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SOV/128-58-11-13/24

Structural Transformations of Cast Iron in Saturation with Magnesium in the
Zone of Eutectic Temperatures

better knowledge of the mechanism of graphite formation in
cast iron treated with magnesium and may serve as a basis
for further investigation.

There are 9 microphotos, 1 table, 1 diagram, and 2 graphs.

1. Cast iron--Structural analysis
2. Cast iron--Transformations
3. Cast iron--Phase studies
4. Magnesium--Metallurgical effects

Card 2/2

BERG, P.P., doktor tekhn.nauk; BIDULYA, P.N., doktor tekhn.nauk; GRECHIN, V.P., kand.tekhn.nauk; DOVGAEVSKIY, Ya.M., kand.tekhn.nauk; ZHUKOV, A.A., inzh.; ZINOV'YEV, N.V., inzh.; KRYLOV, V.I., inzh.; KUDRYAVTSEV, I.V., doktor tekhn.nauk; LANDA, A.F., doktor tekhn.nauk; LEVI, L.I., kand.tekhn.nauk; MALAKHOVSKIY, G.V., inzh.; MIL'MAN, B.S., kand.tekhn.nauk; SOBOLEV, B.F., kand.tekhn.nauk [deceased]; SKOMOROKHOV, S.A., kand.tekhn.nauk; STEPIN, P.I., kand.tekhn.nauk; USHAKOV, A.D., kand.tekhn.nauk; FRIDMAN, L.M., inzh.; KHRAPKOVSKIY, E.Ya., inzh.; TSYPIN, I.O., kand.tekhn.nauk; SHKOL'NIKOV, E.M., kand.tekhn.nauk; POGODIN-ALEKSEYEV, G.I., prof., doktor tekhn.nauk, red.; BOLEHOVITINOV, N.F., prof., doktor tekhn.nauk, red.toma; LANDA, A.F., prof., doktor tekhn.nauk, red.toma; RYBAKOVA, V.I., inzh., red.izd-va; SOKOLOVA, T.F., tekhn.red.

[Handbook on materials used in the machinery industry] Spravochnik po mashinostroitel'nym materialam; v chetyrekh tomakh. Pod red. G.I.Pogodina-Alekseeva. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry. Vol.3. [Cast iron] Chugun. Red.toma N.F.Bolkhovitov i A.F.Landa. 1959. 359 p. (MIRA 13:1)
(Machinery industry) (Cast iron)

STEPIN, P.I.

High melting-point addition alloy for modification of cast iron
by magnesium. Lit. proizv. no.1:10-11 Ja '59. (MIRA 12:1)
(Cast iron--Metallurgy) (Magnesium alloys)

SOV/180-59-1-22/29

AUTHOR: Stepin, P.I. (Moscow)

TITLE: Saturation of Cast Iron with Magnesium (O nasyschenii chuguna magniyem)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1959, Nr 1, pp 111-113 (USSR)

ABSTRACT: The object of the work described was to find the major factors operating in cast iron being saturated with magnesium at and around the eutectic temperature. A diffusion method was used in which a cylindrical specimen of the metal was compressed together with the magnesium at its top end in a thick-walled steel container. On heating the container pressure was produced inside by the magnesium vapour, which extended the structural transformation range and promoted diffusion. Examination of sections showed that the magnesium diffusing into the body of the specimen stabilizes the pearlite and makes the metal base of the iron denser. Fig 2 shows a cross-section after heating to 1150°C; the magnesium tends to follow the austenite grain boundaries. The pressure developed in the specimen accelerates and modifies the solution of graphite during heating, leaving characteristic traces (Fig 4). On cooling the specimen the secondary graphite

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Saturation of Cast Iron with Magnesium SOV/180-59-1-22/29

either deposits on the traces of the primary graphite or on new centres mainly on austenite grain boundaries: a complete transformation of graphite thus occurs under the experimental conditions in the recrystallization of graphite in the solid state. Examination of specimens treated at the eutectic temperature showed that the formation of spheroidal graphite can occur in three ways, depending on the composition and cooling rate. For comparison droplets ejected from liquid cast iron during treatment with magnesium at atmospheric pressure were examined (Fig 5), confirming the ability of magnesium to hold carbon in the base metal and the result obtained at high pressures.

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There are 5 figures and 3 Soviet references.

SUBMITTED: October 8, 1953

STEPIN, P.I.

Certain factors in the graphitization of magnesium cast iron. Lit.
proizv. no. 2:34-37 F '61. (MIRA 14:4)
(Cast iron—Metallography)

CORSHKOV, A.A., doktor tekhn. nauk, prof.; VOLOSHCHENKO, M.V.,
kand. tekhn. nauk. Priniral uchastiye YUDIN, Ye.I., inzh.;
STEPIN, P.I., kand. tekhn. nauk, retsenzent

[Cast crankshafts] Litye kolenchatye valy. Moskva, Izd-vo
"Mashinostroenie," 1964. 194 p. (MIRA 17:5)

STEPIN, S. (g.Kostroma)

At the session of a district soviet. Prem. keep. no. 8:27 Ag '56.
(Kostroma--Cooperative societies) (MIRA 9:10)

Stepin, S. A.

Stepin, S. A. - "Artritis in the presence of tuberculosis of the knee joint in children," Trudy O"e in. nauch. soveia pri Upr. Izvator. Kurorta, Vol. .11, 1948, p. 57-66, - Bibliog: 13 items

DO: 0-4355, 14 August 53, (letopis 'Zhurnal 'nykh Statey, No. 15, 1949.)

STEPIN, S.A.

SORKIN, A.Z., professor; KIPTENKO, N.D., kandidat meditsinskikh nauk; GOROVA YA, G.Ya.; KASHINSKAYA, K.A.; EYNIS, V.L., professor, direktor; STEPIN, S.A., kandidat meditsinskikh nauk, zaveduyushchiy; PETROV, Ye.D., kandidat meditsinskikh nauk, direktor; LYASHENKO, A.Ye., glavnyy vrach.

Comparative evaluation of immediate results of hospitalizing children with tuberculosis of the bones under the climate conditions of Yevpatoria and of the Moscow area. Probl. tub. no.3:35-38 My-Je '53. (MLHA 6:7)

1. Moskovskiy gorodskoy nauchno-issledovatel'skiy tuberkuleznyy institut (for Eynis). 2. Yevpatoriyskaya kostnotuberkuleznaya klinika instituta klimatoterapii tuberkuleza (for Stepin). 3. Institut klimatoterapii tuberkuleza (for Petrov). 4. Pervaya Zagorodnaya tuberkuleznaya bol'nitsa Mosgorzdravotdela v Mytishchakh (for Lyashenko).

(Tuberculosis--Hospitals and sanatoriums)

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STEPIN, S. L.

25873. STEPIN, S. L. Povsednevno' propagandirovat' trekhletniy plan razvitiya obshche stvennogo zhivotnovodstva. Bol'shevik belorussii, 1949, No. 7, S. 30-37.

So. Leto is' Zhurnal'nykh Statey, Vol. 34, Moskva, 1949

STEPIN, V.

A new heart for the "Ural" motorcycle. Za rul. 21 no.7:13
Jl '63. (MIRA 16:8)

1. Rukovoditel' gruppy dvigatelye konstruktorskogo byuro
Irbitskogo motozavoda.
(Motorcycles—Engines)

STEPIN, V.I.

Alpinism serves production. Geod. i kart. no.3:59-61 Mr '63.
(MIRA 16:7)

(Topographical surveying)
(Mountaineering)